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ADOPT HIGH-SPEED BORING, THREADING, AND MILLING METHODS

INTRODUCE HIGH-SPEED BORING -- Moscow, Komsomol'skaya Pravda, 2 Mar 51

The adoption of high-speed cutting methods has become widespread in Soviet machine building. However, for the most part, these methods have been applied successfully in lathe work only. There are still many shortcomings in the use of high-speed methods in milling, drilling, slotting, and boring operations.

N. Leont'yev at the Leningrad Machine-Tool-Building Plant imeni Il'ich describes how, after a great deal of trial and error, he finally succeeded in applying high-speed methods to boring machines.

Boring is usually the final operation in the machining of a part. Therefore, the responsibility as to how the part is finished rests largely on the boring-machine operator. Even the slightest deviation from the technical specifications renders the part worthless and the prior work of many people is wasted.

The boring section at the Machine-Tool-Building Plant imeni Il'ich lagged for many years. Since the relative proportion of boring operations at the plant was large, the assembly of machine tools was frequently held up.

Leont'yev has been able to bore 95-millimeter-diameter holes in cast-iron parts at a speed of 220 meters per minute. When the parts are not too big, he fastens several pieces (up to 15) together in a pack, which decreases the time required for auxiliary operations and increases labor productivity. He uses a universal-type attachment, a hard-alloy, multilipped tool, and quick-change chucks which make possible the securing and changing of the cutting tool while the spindle is in operation, and without stopping the machine. He also combines high-speed boring with high-speed milling.

This is the first instance in which boring operations have been converted to high-speed methods.

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CONVERT TO HIGH-SPEED THREADING OPERATIONS -- Moscow, Trud, 4 Mar 51

One machine shop and 13 bays have been completely converted to high-speed methods of metal turning at the Moscow Machine-Tool-Building Plant imeni S. Ordzhonikidze. More than 300 operators are machining parts at a rate of 300-500 meters per minute.

High-speed methods can be applied only if the work piece and tools are securely fastened on the machine tool. The necessary rigidity was not obtained under the old method of securing the part on mandrels or between centers. In addition, mounting the parts consumed a great deal of time. A special fixture which replaced the mandrel was then designed for holding hollow parts. This fixture reminds one of an enlarged rotating center with the point cut off and on which notches have been made. The fixture is installed in the end of the spindle. The part is fastened on this fixture and tightened by means of a knob. The notches prevent the part from turning.

For securing other parts, a special faceplate was manufactured which replaces a four-jaw chuck. This makes possible the installation of the part along the diameter within an accuracy of 0.02 millimeters.

Recently, high-speed methods were applied in the cutting of 60 x 3 and 55 x 3 buttress screw threads on a hollow spindle for the Model 1225 automatic. Although the norm for machining the part was formerly 175 minutes, at present it can be finished in 2½ minutes. This is accomplished by combining one milling operation and two finishing-lathe operations into one. Lines are drawn on the part to indicate where the cutter should be applied to the work and where it should be withdrawn. The part is held in a special device and tightened by means of a knob. Cutters with T15K6 hard alloy are used. The spindle speeds are brought up to 955 revolutions per minute; the depth of cut is 0.6 millimeters; and the number of passes, seven.

The cutting of large-module threads at high speeds was achieved by replacing the swing-frame gear by a gear with a larger number of teeth; thus, the lead screw was converted to direct movement.

HIGH-SPEED MILLING SAVES TIME, MACHINES, MEN -- Leningradskaya Pravda, 24 Feb 51

In 2-years' time, a complex brigade at the Leningrad Kirov Plant has converted 135 operations and dozens of machine tools to high-speed milling methods. Eighty types and sizes of high-speed milling cutters and a number of high-speed attachments are being used. The brigade has trained 108 foremen, adjusters, and milling-machine operators in high-speed machining methods. The use of high-speed milling for machining tractor parts saves 5.5 hours and frees six milling machines and 20 operators in the manufacture of one tractor.

PRODUCE NEW TOOLS FOR HIGH-SPEED METALWORKING -- Yerevan, Kommunist, 9 Feb 51

During 1950, enterprises of the Ministry of Machine-Tool Building increased the production of hard-alloy cutting tools and milling cutters 85 percent.

Recently, the manufacture of new types of products was started. Among these are combination tools for combination machine tools. For example, several operations can be performed simultaneously with a combination mill by the high-speed method. This method has increased labor productivity three to four times. Manufacturers of these products are the Moscow and Sestroretsk Tool Plants and the Frezer Plant.

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Until now, the use of high-speed methods for drilling parts was not used to any great extent. During 1951, however, enterprises of the Ministry of Machine-Tool Building have started mass production of hard-alloy drills for high-speed drilling.

OVERCOME OBSTACLES TO HIGH-SPEED METAL CUTTING -- Riga, Sovetskaya Latviya, 25 Feb 51

The first obstacle encountered at the Riga Speks Plant in its effort to cut metal at high speeds was the low durability of high-speed, steel-cutting tools. This problem was solved by coating the cutting edges of the tools with hard alloy. However, with the use of hard-alloy tools, the power of the motor was inadequate for high-speed cutting. After installation of more powerful motors in the machine tool, another problem arose. Increased vibration produced ragged surfaces on the parts and caused the cutters to break. This stumbling block was surmounted by reinforcing the bearings, and mounting the machine tool on a new, massive foundation.

As a result, this machine can now produce in 8 hours what it formerly took 18-20 hours to do.

All equipment at this plant has been converted to individual drive. Previously, the machine tools were driven from one transmission which in turn was powered by one large motor. Even the slightest defect in the motor necessitated the stopping of a whole group of machine tools. Now, each machine has an individual motor and standstill time has been greatly reduced.

Belt and pulley control has been replaced by push button control.

DISTRIBUTE POSTERS ON HIGH-SPEED METAL CUTTING -- Moscow, Trud, 1 Mar 51

The Ural Palace of Engineering has released and is disseminating to subscribers a series of multicolored posters on High-Speed Metal Cutting.

The posters include the following subjects: selection of cutting-tool geometry; design of hard-alloy-tipped tools; mechanical fastening of hard-alloy blades; tool grinding and finishing; chip breakers; technological equipment which decreases the time required for auxiliary operations; safety techniques for cutting at high speeds.

The achievements of innovators, leading plants, and scientific institutes are shown in the posters.

The cost of one set of 20 posters is 50 rubles.

For posters and subscription blanks, apply to: Sverdlovsk, 2, Ural'skiy Dom Tekhniki. -- Advertisement

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